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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,025	02/28/2002	Marc R. Anderson	286697-00005	7853

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EXAMINER

SODERQUIST, ARLEN

ART UNIT

PAPER NUMBER

1743

DATE MAILED: 07/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/086,025

Applicant(s)

ANDERSON ET AL.

Examiner

Arlen Soderquist

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-109 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-109 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7. 6) ☐ Other:

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 1-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dahmen, Marchante-Gayson, Rottmann or Viczian in view of Kingston (US 5,414,259 or WO 99/39198), Dureault and Multala.

In the paper Dahmen presents trace element determination of high-purity chemicals for the processing of semiconductors with high-resolution ICP-mass spectrometry using stable isotope dilution analysis (IDA). A new high-resolution ICP mass spectrometer Finnigan MAT "ELEMENT" is applied in combination with isotope dilution analysis to evaluate the capabilities of these techniques to the accurate determination of trace elements in processing chemistries for semiconductor production. The MS provided mass spectral resolution of 300-7500 and thus eliminated most of the spectral interferences quadrupole mass analyzers are suffering from. Dahmen does not teach all of the system components.

In the paper Marchante-Gayon presents a study of random and systematic errors for the determination of molybdenum by inductively coupled plasma mass spectrometry using online isotope dilution analysis. Reverse isotope dilution analysis was applied for the determination of

the concentration of a  $^{95}\text{Mo}$  enriched spike and the procedure was automated using an auto sampler where natural Mo standards and samples were alternatively mixed online with the spike solution. A new equation is proposed for the online mixing of samples and spike using the autosampler. The measurement of a natural Mo standard between the samples makes possible to perform isotope dilution analysis referring the results to the natural Mo standard regardless of the concentration of the spike. The effects of both systematic and random errors were examined and the error theory was applied for the accurate determination of Mo in biological materials by ID-ICP-MS. Marchante-Gayon does not teach all of the system components.

In the paper Rottmann presents the development of an online isotope dilution technique with HPLC/ICP-MS for the accurate determination of elemental species. An online isotope dilution technique was developed for use with a HPLC system (HPLC) coupled to an inductively coupled plasma mass spectrometer (ICP-MS). With this method it is possible to characterize elemental species at low concentration levels and to quantify them accurately. The possibilities of this method are shown using the samples of the determination of the interactions of different molecular weight fractions of dissolved organic matter (DOM) with copper and molybdenum in a natural water sample. Rottmann does not teach all of the system components.

In the paper Viczian teaches on-line isotope dilution and sample dilution by flow injection and inductively coupled plasma mass spectrometry. A systematic investigation was made to demonstrate the applicability of a flow injection system for online isotope dilution and online sample dilution, as obtained by merging the sample solution with the spike solution or with the diluent, respectively. The effect of the sample to spike ratio on the precision and accuracy was examined, and the advantages and limitations of the proposed technique are demonstrated. Viczian does not teach all of the system components.

In the published application Kingston teaches speciated isotope dilution mass spectrometry of reactive species. Speciated isotope dilution measurement of reactive species by spiking stable isotope to convert to speciated enriched isotope corresponding to species to be measured. The method is carried out by providing at least one predetermined stable isotope. The sample is spiked by an isotopic spike prepared by converting the stable isotope to a speciated enriched isotope corresponding to the species to be measured in the sample. The

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isotopic spiked species are equilibrated with the species to be measured. At least a portion of the species is separated from the sample and isotope ratio determination is carried out for each species to be measured. The species concentration is mathematically deconvoluted, using given mathematical formulas, while correcting for species conversion and/or incomplete separation. To determine a specie of interest in environmental, biological, pharmaceutical and industrial samples and standard reference materials, e.g. Cr (III) a trace element essential for human health and Cr (VI) poisonous to most animals. An accurate quantification of the species of interest is ensured in spite of incomplete extraction, conversion, solubility, separation, isolation or degradation of species. The method facilitates correction for incomplete isolation of species through the use of a tag, which joins the isotope spike with the specie to be measured.

In the patent Kingston teaches species measurement using enriched isotope spikes of same speciated form - involves using specie ratio to measure, equilibrate, separate and subsequently determine the specie concentration by dilution mass spectrometry. Method of isotope dilution measurement of a sample comprises: (a) providing at least one predetermined, stable isotope; (b) converting the isotope to a speciated enriched isotope corresponding to the species to be measured in the sample; (c) spiking the sample containing the species to be measured; (d) equilibrating the spiked species with the species to be measured; and (e) separating all the species from the sample and determining the concentration of the species to be measured by employing isotopic element specie ratios. Time-resolution chromatography may be employed to effect the separation and a mass spectrometer may be employed in the isotope dilution measurements. A determination as to whether isotope conversion has occurred is made. Species measurement using enriched isotope spikes of same speciated form. The specie ratio is employed to measure, equilibrate, separate and subsequently determine the specie concentration by dilution mass spectrometry.

In the published application Dureault teaches an automatic sampling, diluting and analyzing module. The module has 1st and 2nd sections containing eight-way valves, which are operable to sample test liquid, add diluents and reagent prior to analysis. Typically the 1st section samples the test liquid using a syringe pump to supply a loop. Syringe sucks up diluent and then scavenges liquid from the loop for dilution and supply to a 2nd loop. Another syringe scavenges the now diluted sample from the 2nd loop and sucks up reagent and diluent and then

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delivers the resulting sample/reagent/diluent mixture to an analyzer. Utility is in analyzing hydrazine in solutions used in nuclear fuel reprocessing using dimethylaminobenzaldehyde reagent.

In the paper Multala teaches computer controlled start-up and monitoring system for a pilot-plant distillation column including an on-line quadrupole process analyzer. The start-up-2/75 distillation control system presented is based on a known the start-up-1/75 system reported by K.K. Salminen and A. Halmu (1977). System enhancements are on-line, quadrupole, mass-spectrometric process analyzer and a reporting program to print out state reports of the distillation column in real time. Six sample points in the distillation process are analyzed continuously by the on-line control system. The sampling rate is 30 s and the analyzing rate ~1 s. A relative accuracy of 2% was achieved with binary water-ethanol mixture. A state report is printed, normally, every 3 minutes, including concentrations, flows, temperatures, and mass balances. The system can be applied to experimental research of transient responses and distillation process dynamics.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the various apparatus of Kingston, Dureault and Multala into the device and methods taught by Dahmen, Marchante-Gayson, Rottmann or Viczian because of the automation advantages taught by Kingston, Dureault and Multala and the recognition that the apparatus of Dahmen, Marchante-Gayson, Rottmann or Viczian can perform the isotope dilution analysis on a variety of samples including industrial as taught by Kingston.

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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3. Claims 1-109 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-100 of copending Application No. 10/094,394. Although the conflicting claims are not identical, they are not patentably distinct from each other because the two sets of claims are essentially coextensive in scope.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art deals with isotope dilution apparatus and methods and automated sampling apparatus and methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (703) 308-3989. The examiner's schedule is variable between the hours of about 5:30 AM to about 5:00 PM on Monday through Thursday and alternate Fridays.

For communication by fax to the organization where this application or proceeding is assigned, (703) 305-7719 may be used for official, unofficial or draft papers. When using this number a call to alert the examiner would be appreciated. Numbers for faxing official papers are 703-872-9310 (before finals), 703-872-9311 (after-final), 703-305-7718, 703-305-5408 and 703-305-5433. The above fax numbers will generally allow the papers to be forwarded to the examiner in a timely manner.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



June 25, 2003

ARLEN SODERQUIST  
PRIMARY EXAMINER